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Education, Occupation and Career Expectations: Determinants of the Gender Pay Gap for UK Graduates

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Executive Summary

The gender wage gap has been a constant issue of research in the last four decades but no consensus has been reached regarding its origin. The main two theoretical hypotheses are that:

- 1) women are discriminated against
- 2) men and women select themselves into education/occupation with different wage profiles

Traditionally, economists have decomposed the gender wage gap between a component that can be explained by differences in the characteristics of men and women and an unexplained component – which reflects discrimination but also model misspecification (omission of variables that do differ between gender but may not be observable to the researcher).

This research aims to reduce the possible bias in the decomposition due to misspecification by including characteristics that are typically not available in most other research. More specifically, we focus on three domains and include information on

- i) the subject of degree as well as educational attainments
- ii) job characteristics
- iii) life expectations and motivations

The last component has been omitted from most previous research. The dataset follows UK university graduates for the first 42 months following their graduation in 1995.

Life expectations and motivations are measured by 20 items ranging from Financial return is an important long-term value to statements about ambition. On average, women have lower career expectations and long-term values that are less driven by career success than men. The

gender differences in long-term values are consistent with social stereotypes: men are less altruistic than women and care mostly about their own career. The largest gender difference in expectations regards the decision to have a career break for family reasons where almost 2/3rd of female graduates agree somewhat or a lot about this statement but only 10 per cent of men do so.

The gender wage gap for this young population of UK graduates reaches 12.6 per cent, however when accounting for differences in education, occupation and expectations, 84 per cent of the gap can be explained. The three main group of explanatory variables accounts for a similar proportion of the gap. The single most important individual component of the gap is due to differences about career break expectations which alone accounts for 10 per cent of the gender wage gap.

Whilst previous literature has highlighted a motherhood gap, were the wage gap increases after childrearing decisions are made, here we show that women who have preferences for childrearing have lower wages even early on in their career. Additionally, we find that women with higher preferences for childrearing, act rationally and search the job market with less intensity, which could be the mechanism by which child rearing preferences affect wages.

Men and women do make different choices through out their life which significantly affect their wages. However, one should be concerned that the “choices” made by women stem from fear of discrimination, social pressure and child rearing expectations and one could debate whether these choice variables should be included as explanations of the gender wage gap.

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1 Introduction

Differences in wages between men and women have been the focus of attention of social scientists and policy makers for decades (see Altonji and Blank, 1999, for an excellent survey). In the UK women are still paid 80 per cent of the men's mean wage (Harkness, 1996; Blackaby et al. 1997; Lissenburgh, 2000, Swaffield, 2000). Even after accounting for differences in observable characteristics affecting productivity such as education, previous labour market experience or occupation, about half of the gap is left unexplained.

Whilst employer discriminatory behaviour has been found (Goldin and Rouse, 2000)¹, it is also argued that some of the gap is due to choice as women follow social expectations, choose careers reducing the likelihood of discrimination or allowing them to fulfil other commitments, such as childcare. The characteristics affecting these choices are typically not observable by the researcher, but according to Polacheck and Kim (1995) using panel data, this unobserved heterogeneity accounts for as much as 50 per cent of the gender wage gap. Gender heterogeneity has been traced to differences in educational choice (Chevalier, 2002, Machin and Puhani, 2003, Montmarquette et al., 2002), occupational choice (Baker and Fortin, 2001), career expectations (Swaffield, 2000, Vella, 1997), or negotiation skills (Babcock and Laschever, 2003)².

Additionally, a so called motherhood gap has been found in numerous studies where a wage penalty is observed for mothers compared to childless women. Anderson et al (2002), for example, find a 10 per cent wage penalty for the first child amongst US university

¹ Discriminatory behaviours are typically difficult to observe. Using a unique panel of applicants to jobs at 11 symphonic orchestras in the US and detailed information on the hiring process, Goldin and Rouse find that "blind" auditions, in which the gender of the candidate is not revealed to the jury, result in an increased probability of a woman obtaining the job.

² The experimental literature has highlighted that for the same level of ability, women choose pay schemes that are less financially rewarding than men, perhaps reflecting greater risk aversion (Niederle and Vesterlund, 2005). Babcock and Laschever (2003) also report that women dislike negotiation and settle for less advantageous deals. Blackaby, Booth and Frank (2005) also show that in a survey of academic staff in UK economics departments, women were less likely to receive outside employment offers, which affects negatively their wage.

graduates. In this paper, we highlight some components of this typically unobserved heterogeneity and estimate simultaneously the effects of education, career choices and character traits on the gender wage gap. We focus on gender differences in career expectations and motivations and especially the future decision concerning childrearing. We rely on a homogenous population of UK graduates that has been on the labour market for a maximum of 42 months³. Although the results are obtained for a specific population, the gender wage gap for graduates is not too dissimilar to the one observed for the rest of the population.

The survey indicates that, males graduate from Engineering and Science, work in the private sector in a male dominated occupation and are more career-oriented. Women graduate from Education, languages and Art degrees, work in smaller firms and care about the usefulness of their job. However, the largest difference in job expectations is due to expected childrearing responsibilities: 28 per cent of women strongly agree that they expect to take a career break for family reasons but only 2 per cent of male graduates do⁴. This single variable is responsible for 10 per cent of the explained wage gap in the most extensive model.

For this young homogenous population, a raw wage gap of 12.6 per cent is found and in the favoured decomposition 84 per cent of the gender wage gap is explained, which is considerably more than in the previous literature. Job values and expectations are important components of the gender wage gap, accounting respectively for 21 per cent and 12 per cent of the explained gap, whilst subject of study and job characteristics represent another 25 per cent each. The choice of decomposition technique is not innocuous; using identical specifications, the proportion of the gap explained ranges between 58 per cent and 84 per cent depending on the decomposition technique.

³ Focussing on younger workers has the advantage of limiting the bias due to fertility decisions which affects most of the literature on the gender wage gap.

⁴ At the time of the survey, the legislation entitled women to take up to six months maternity leave; no provision for paternal leave was available. We assume that respondents to the survey did not interpret career break as being on maternity leave.

Whilst it has been documented that there is a substantial wage penalty for childbearing, we show that the expectation of a career break for family reasons is one of the main explanatory components of the gender wage gap. Women who expect to take a career break for child rearing reasons experience lower wages even at an early stage of their career. Moreover, women with a traditional view of childrearing are less likely to be in a perfect match and yet search the job market with less intensity. Hence, childrearing expectations affect female wages even before the fertility decision is taken.

The paper is organised as follows: the next section reviews the literature on the effects of subject of study choices, occupational choices and character traits on wages. Where possible it relates these to gender differences. Section 3 examines the four decomposition techniques used in the empirical section. The graduate survey is described in section 4 and the results of the decomposition are presented in section 5. In section 6, we investigate the effect of character traits on job matching and conclude in section 7.

2 Literature

We do not attempt to summarise the large literature on the gender wage gap (see Altonji and Blank, 1999, for a comprehensive survey) but instead focus solely on studies of the effect of education, occupation or character traits on the gender wage gap.

II.1 Subject effects

A large variation in the returns by subject is found in the UK with science majors usually obtaining the largest returns and Arts, Languages and Social Sciences offering the lowest returns (Chevalier et al., 2002, Walker and Zhu, 2005). For all subjects, the returns are higher for women than for men and the differences are the largest for Arts and Education

graduates. This does not indicate that female graduates earn more than their male counterparts, but mostly indicates that higher education reduces the gender wage gap.

Differences in subject returns reflect specific supply and demand for graduates but it is also worth noting that subjects most popular with women (Humanities/Languages) are associated with lower grades (McNabb et al., 2002), higher risk of unemployment, over-education and lower average pay in general (Chevalier, 2002). Montmarquette et al. (2002) note that men choose subjects with high financial returns whilst women are more risk averse, and tend to choose subjects with the greatest prospects of graduation and for which they have the highest affinity. Including the degree subject typically increases the explained component of the gender wage gap by 6 to 17 percentage points (see review in Chevalier, 2002). Machin and Puhani (2003) also show that the gender wage gap is sensitive to the number of subject categories⁵.

Occupation effects

Women tend to work in the public sector and in a limited number of occupations generally associated with lower wages (Baker and Fortin, 2001). This segregation leads to a penalty for working in a female dominated occupation which is larger for women than men (Brown and Corcoran, 1997). Moreover, Swaffield (2000) shows that the wage penalty for time out of the labour market is also higher for women in male dominated occupations, and provides the rationale for the self-selection of family motivated women in female dominated occupations. Employer-employee data provides further evidence on the effect of segregation. Bayard et al. (2003), using US data, estimate that the proportion of female in a given occupation has a small contribution to the gender wage gap (5 per cent in their full model) but that gender

⁵ The high disaggregation of subjects may bias the results of the decomposition. For subjects with a large gender imbalance and a small number of observations, the subject estimates in the wage equation for the “minority” gender are imprecise and are multiplied by the mean gender difference in participation (which is large) in order to calculate the explained component of the differential.

segregation at the establishment and job cell level contributes for 15 per cent each. Mumford and Smith (2004) find similar effects of segregations in the UK.

Character trait effects

Recently, economists have investigated character traits as determinants of wages. Leadership, motivation, self-esteem, aggression, beauty and cleanliness are among the traits positively correlated with wages (see Bowles et al., 2001, for a survey). Moreover, the impact of these characteristics differs by gender; for high occupational status, Osborne (2001), using the UK National Child Development Study, estimates that a one standard deviation change in aggression increases the earnings of men by 20 per cent but reduces those of females by 14 per cent.

Most of the literature on the gender wage gap has stressed the importance of career interruptions and family responsibilities, but only a few have incorporated a measure of the attachment to the labour force. Vella (1994) uses an attitude index to divide the population of young Australians between “modern” and “traditional” given their attitude towards the role of women. Modernity increases female educational attainment: “moderns” are 10 percentage points more likely to attend university. Swaffield (2000) uses the British Household Panel Survey to construct measures of work and home oriented motivation (6 questions on the respective role of men and women), aspiration (proxied by maternal occupation) and household constraints (history of personal circumstances that may have prevented participation to the labour force in the past). Work motivation is a significant determinant of wages for women but not for men. Maternal occupation and work motivation have a similar effect on wages (+6 per cent) and household constraint have a permanent effect negative effect even after accounting for actual labour market experience. Chevalier (2002) uses other measures of work motivation: financial motivation, wanting to do a socially useful job,

ambition and workaholism. Contrary to Swaffield (2000), he finds that these characteristics account for a substantial part of the explained wage gap (30 per cent).

A further issue of debate concerns the origins of the gender differences in subject and occupational choices, or in motivation. These variables are potentially endogenous as they reflect choices made by women to prevent discrimination. Moreover, the motivation variables are measured concomitantly to the wage and individuals may simply justify their own labour market situation; for example an individual with a low wage will claim not to be financially motivated. The endogeneity of motivation, as discussed in Breen and Garcia-Penalosa (2003), biases the estimate of motivation and may lead to an overestimation of the explained component of the gender wage gap (Bertrand and Mullainathan, 2001). For example, let us assume that independently of their gender, low paid individuals claim not to be financially motivated. In a society where all women are underpaid, each will claim to be unmotivated by financial rewards, and the inclusion of the motivation variable will lead to the conclusion that all of the gender wage gap can be explained. If on the other hand, men are as likely as women to be underpaid, the motivation variable has no effect on the explained gender wage gap. However, Swaffield (2000) demonstrates that deviation from the mean motivation is not significantly correlated with wages whilst permanent motivation (6 year average) is, which suggests that individuals do not solely self justify their current situation and that job market motivation is a determinant of female wages. Job market orientation is mostly a fixed characteristic of an individual and following the literature, the exogeneity of these choice variables is assumed.

Other determinants of the gender wage gap have been suggested. Women may have lower expectations, a greater dislike for negotiation (Babcock and Laschever, 2003) and competition (Niederle and Vesterlund, 2005) which would lead to lower reservation wages. Additionally, a typical search model predicts that women expecting a career break face lower

returns to the search and would thus lower their reservation wage. These characteristics may explain that female graduates are found to have lower wages in their first job even after accounting for education. However, Orazem et al. (2003) using a small sample of graduates from Iowa university do not find that attitudes towards the position of women in the labour market had any effect on starting salary.

3 Decomposition Methodology

As in the bulk of the literature we estimate for each gender (g) a log wage equation.

$$\ln w_{ig} = X_{ig} \beta_g + \varepsilon_{ig} \quad g = m, f \quad (1)$$

Individual characteristics, all assumed to be exogenous, are included in a vector X_{ig} . β_g is the vector of gender-specific returns to characteristics and ε_{ig} is an individual error term. The average gender gap in earnings can be decomposed between the mean difference in observed characteristics and the difference in the returns to these characteristics (Oaxaca-Blinder decomposition).

$$\Delta = \overline{\ln w_m} - \overline{\ln w_f} = (\overline{X_m} - \overline{X_f})\beta_g + (\beta_m - \beta_f)\overline{X_{1-g}} \quad (2)$$

where variable means are denoted with a bar. The first term of (2) is the component of the gender pay gap that can be explained by between group differences in observed characteristics. The second term represents the fraction of the gap originating from differences in the returns to characteristics between the two groups and is referred to as the unexplained component of the gender wage gap.

The choice of a reference group to decompose (2) is not innocuous but since neither wage function (β_g) would exist in the absence of discrimination, both choices lead to biased estimates of the explained wage gap. Rather than giving a weight of one to the wage function

of one group and zero to the other, equal weights can be given so as to define the wage function that would prevail in a post-discrimination world ($\beta^* = .5\beta_m + .5\beta_f$). Instead of this ad-hoc weighting, Cotton (1988) advocates the use of population weights ($\beta^* = \frac{n_m}{N}\beta_m + \frac{n_f}{N}\beta_f$). Neumark (1988) disagrees that the wage function in the absence of discrimination would simply be a weighted average of the current wage functions. Instead, he advocates using pooled estimates to approximate β^* . Whichever weighting scheme is chosen, the gap is decomposed into three components:

$$\Delta = (\bar{X}_m - \bar{X}_f)\beta^* + (\beta_m - \beta^*)\bar{X}_m + (\beta^* - \beta_f)\bar{X}_f \quad (3)$$

The first term in (3) is the explained wage gap, measured at the non-discrimination wage. Compared to (2), the unexplained component is divided into two parts: the advantage of men (extra returns compared to what should be observed in a non-discriminatory world) and the disadvantage of women. When decomposing at the means, little is known of the contribution of individual variables. Starting from the first term in (2), Brown and Corcoran (1997) defined Δ_g as:

$$\Delta_g = (\bar{X}_m - \bar{X}_f)\beta_g \quad (4)$$

Δ_g reflects the increase in female wages, estimated at the price of gender g , if the endowment differential were eliminated. Δ_g is not independent of the metrics used and opposite effects would be found when changing the base category of a dummy variable. To avoid these metric problems, Brown and Corcoran (1997) advocate the use of Δ^* , defined as:

$$\Delta^* = \Delta_m - \Delta_f \quad (5)$$

Δ^* measures the change in female wages if the endowment in variable X were equalised and rewarded at the men's rather than the women's prices. Δ^* is small if either the difference in endowment is small or the differences in the returns are small; thus Δ^* provides a measure

of the contribution of a specific variable to the wage gap, incorporating differences in endowment and returns.

4 Data

The empirical evidence is based on a sample of 10,384 graduates from 33 UK higher education institutions (Elias et al., 1998). All graduated in 1995 and the survey, conducted by mail, includes a complete history of the 42 months elapsed since graduating. As well as the job market history, information on educational attainment, family background and expectations is available.

To limit unobserved individual heterogeneity, mature students (over 28 on graduation) and individuals with disabilities are excluded, and only individuals graduating with a first degree are kept⁶, leaving a sample of 7,510 graduates. The annual gross wage is reported in categories and category mid-points are used to define a continuous variable. On average women work fewer hours than men, thus the gender wage gap for annual wages is biased upward (see Annex 1 for evidence). To limit this bias, only full-time employees are kept (no information on hours worked is available). There is no gender difference in the proportion of full time employees⁷.

Finally, individuals who did not report their current wage or occupation, who are not living in the UK or who have missing values on subject of study or any of the variables used to define character and job expectations are dropped; creating a sample of 5,058 graduates. The sample is then re-weighted to be nationally representative of the graduate cohort of 1995.

⁶ Individuals graduating in 1995 with a diploma or a post-graduate qualification where not part of the sample frame and should not have been sent the questionnaire. However, graduates from 1995 who subsequently gained a post-graduate qualification are included in the analysis.

⁷ 86% of men and 84% of women are full time employees. Among individuals not in full time employment, men are more likely to be self-employed and women part-time employed, studying or out of the labour force.

This dataset is unique as it includes 20 questions on character traits, motivation and expectations, coded on a 5-point scale from very important (1) to unimportant (5). The distributions of answers to job values and career expectations are reported separately by gender in Tables 1A and 1B.

Long-term values significantly differ by gender. Men are more likely to state that career-development and financial rewards are very important long-term values, while women put forward job satisfaction, being valued by employer and doing a socially useful job. These differences typically affect occupational choice and may explain the high feminisation of jobs such as teaching and nursing. Women are also more likely to be concerned with local issues and ecology.

Men are 10 percentage points more likely to define themselves as extremely ambitious. Despite improvements in family friendly policies, two thirds of women still expect to take breaks for family reasons (agree somewhat or strongly) and only 17 per cent expect their partner to do so. Men favour this arrangement with 40 per cent of them expecting their partner to take a career break for family reasons and only 12 per cent of them expecting to do it themselves. Furthermore, a third of women do not expect to work until retirement. On average, women have lower career expectations and long-term values that are less driven by career success than men. The gender differences in long-term values are consistent with social stereotypes: men are less altruistic than women and care mostly about their own career (Babcock and Laschever, 2003)

Other relevant variables are reported in Table 2. Women have higher academic credentials both pre- and post-university. The main gender difference in educational attainment concerns the subject of graduation; the gender imbalance is the greatest in Engineering, Education, and Mathematics. There is no gender difference in the type of higher education institution attended, post-graduate qualification or labour market experience.

However, women are more likely to work in the public sector, in smaller firms, in a professional or clerical occupation and with more female co-workers. Women have had more jobs since graduating (3.1) than men (2.8).

The raw wage differential for this cohort is 12.6 per cent (the mean wages are £18,300 for women and £21,100 for men). So even among a young homogenous population a substantial wage gap is found⁸. The following section determines the origins of this gap and how much can be explained by differences in observable characteristics.

5 Decomposition Results

In Table 3, we highlight the effect of misspecification of the wage equation on the gender wage gap decompositions. The base model is estimated with a parsimonious specification typically found in the literature, including a quadratic function in months of labour market experience, dummies for graduating after the age of 24, being white and region of residence. Due to the relative homogeneity of the sampled population, this base model explains only 20 per cent of the wage gap suggesting that in the early months of graduates' careers, the gap stems from what are usually unobserved variables.

Subject effects

The second specification includes various measures of educational achievement such as A-level score, degree results, institution type and post-graduate achievements which are correlated with academic ability. Since there is no large gender variation in educational achievement (at least for this cohort), the inclusion of these variables only marginally

⁸ This raw gap is similar to the one found in the Labour Force Survey 1998 for a population of graduates aged under thirty (Annex I), confirming the representative nature of the dataset used. Young graduates experience the lowest gender wage gap but the wage gaps are never too different from the one calculated for the full population.

improves the explanatory power of the model. The additional inclusion of controls for subject of graduation (model 2') increases the explained gap to 50 per cent, with a contribution of subject to the explained component reaching 77 per cent. The wage gap for graduates does not originate from differences in educational attainment but mostly from subject segregation, with women graduating from subjects with lower financial returns.

Occupation effects

To test the effect of job characteristics on the gender wage gap, the base model is now enriched with characteristics of the work place (size, sector), type of contract and feminisation of the occupation⁹. These variables account for 74 per cent of the explained wage gap which rises to 65 per cent of the raw gap. Specification 3' also adds dummies for occupational group (at the 1-digit level) to capture differences in occupation choice. Whilst occupation can be considered an endogenous variable, its inclusion allows for the control of occupational idiosyncrasies. The inclusion of these variables has no effect on the explained wage gap, suggesting that early on in their career there is no gender difference in the occupational attainment of graduates¹⁰.

With specification 3'', we test the assumption that job mobility impacts on wages by including the number of jobs held since graduation. This single variable accounts for 7 per cent of the explained wage gap but does not alter the conclusions regarding the explained gender wage gap, since as shown in Table 2, men and women have similar mobility patterns.

⁹ This is constructed at the 2-digit occupational code level from the 1996 Labour Force Survey, quarter 3, for all employees aged 16-59. Baker and Fortin (2001) state that results on the effect of feminisation on the gender wage gap are sensitive to the level of aggregation of the feminisation variable. Two-digit level is the most detailed level of aggregation attainable with this graduate dataset.

¹⁰ This result could also stem from the broad definition of occupational group used here (Kidd and Shannon, 1996).

Character trait effects

Model 4 extends the base model by adding information on the character traits of the individuals. This model explains 66 per cent of the raw gap. The 12 job-values account for 45 per cent of the explained gap and career expectations for another 30 per cent. Thus, character traits and differences in expectations between genders are important determinants of the wage gap, which have been usually overlooked in the literature.

Whilst it is important for comparison purposes to identify the effect of each group of variables on the gender wage gap, the final model uses all the available information. The full model explains 84 per cent of the wage gap, with the advantage of men and disadvantage of women being almost equal at around 1 percentage point of the raw wage gap. Degree subject, job characteristics and job values each account for about a quarter of the explained gap¹¹. The explanatory power of job characteristics is halved compared to the previous model suggesting that degree subject and career expectations account for a large part of the differences in job characteristics. It is worth noting that the explanatory power of the character trait variables although reduced by two thirds does not disappear in a model including job characteristics. Hence character traits are unlikely to be solely self-justifying one's labour market position.

We also isolate the explanatory power of career break expectations in the last two models. This variable is responsible for 24 per cent of the explained gender wage gap in the model including only character traits as an additional exogenous variable, and 12 per cent in the full model. It is thus not solely career breaks that lead to a reduction in wages for women but also the expectation of having a career break. Women who have a more traditional view on childrearing experience lower wages early on in their career. In section 6, we present some evidence that this group of women search for jobs with less intensity.

¹¹ A model including interactions between subject choice and degree results was also tested, but the inclusion of these interactions did not improve the share of the gender wage gap that could be explained.

Since results could mostly be driven by gender differences in occupational choice, the results are replicated on a restricted sample of managers and professionals, the two typical graduate occupations. The wage gap is slightly reduced at 10 per cent, and 80 per cent of it can be explained by the model. The only difference from the full population is that job characteristics are no longer a major component of the gender wage gap, highlighting that in graduate occupations, women are in similar jobs to men.

Additional decompositions

The choice of post-discrimination reference group alters the explained component of the gender wage gap. Using the full model, but relying on a different set of non-discriminatory prices, between 55 per cent and 83 per cent of the gap can be explained (see Table 4). All decompositions lead to the conclusion that a large proportion of the gender wage gap can be accounted for when introducing variables on educational and occupational choices as well as character traits¹².

Based on the preferred specification (Model 5) the contribution of each variable to the gender wage gap can be assessed using the method proposed by Brown and Corcoran. Delta is the change in earnings that women would get if they had the same characteristics as men and rewarded at the men's rather than the women's price. A negative Δ^* indicates either that, women have a greater endowment in this characteristic or that returns to this characteristic are larger for women. Most variables have only a marginal impact on the gender wage gap since either the mean characteristics are similar between genders or the returns to these characteristics are not gender-specific.

In Table 5, we report the estimated returns (gender specific or from pooled regression) for the group of variables that have been found to affect the gender wage gap. Additionally,

¹² Depending on the decomposition method, the subject of degree, job characteristics, job value and career expectation account for 27% to 31%, 6% to 43%, 25% to 32% and 0 to 11% of the explained gap respectively.

Δ^* is calculated in the final column. Law, maths, medics, and engineering and business graduates earn at least 10 per cent more than graduates with an Arts degree. Men graduating from law, social sciences, maths, natural sciences and medicine have substantially higher returns than women graduating from these subjects, whilst the converse is true for graduates in languages. Despite these variations in returns and the difference in the feminisation of subjects, the impact of each individual subject on delta is limited.

For job characteristics, we observe the well known firm-size wage gap but the gender differences in returns and means cancel each other out, so that firm size has no impact on the explained gap. Similarly, having a permanent contract has no effect on the gender wage gap despite the 50 per cent higher returns to this type of contract for men. There is a premium, twice as large for men, for working in the public sector, suggesting that entry wages in this sector are competitive. Since women are almost three times as likely to be working in the public sector as men, an equalisation of returns and characteristics would substantially reduce the gender wage gap. Women have had more jobs than men, and the penalty for job change is 50 per cent larger for women, thus impacting significantly on the gender wage gap. Job changes seem to reflect difficulties in finding a job match and thus may capture unobservable characteristics of the individuals which affect wages negatively. As in Brown and Corcoran (1997), the penalty for being in a female job is twice as large for women. Since women work in more feminised occupations, an equalisation of prices and characteristics would substantially decrease the gender wage gap. Three work characteristics significantly contribute to the gender wage gap: the number of jobs held since graduation, working in the public sector and feminisation.

We also proxy job search by the number of jobs held since graduation. Early career job mobility is usually associated with rapid wage growth and greater mobility should be correlated with higher wages (Farber, 1999) but this is not the case here, especially for

women. Greater job mobility may then indicate a bad job match and would thus be associated with lower wages. Since women have been more mobile than men in the early part of their career, mobility differentials significantly increase the gender wage gap.

Graduates who are motivated by financial rewards, status (females only) or international experience (males only)¹³ are rewarded while those favouring career development (females only) or ecological concerns (males only) suffer from a pay penalty. For men, concern with ecological issues and doing a socially useful job, two typically female traits, are penalised, while these character traits have no significant effect on female wages which suggests that men with non-traditional motivations may be discriminated against. Since women are 20 percentage points more likely to find having a socially useful job important, the small difference in the wage penalty associated with this character trait leads to a substantial delta. For the other expectation variables, an equalisation of expectations would only have a limited impact on the gender wage gap, as differences in returns are not large.

Focusing on career expectations, moving up an ambition category is associated with a wage premium reaching about 4 per cent. Other expectations affecting wages negatively are retirement decisions and career change. However, with the exception of career change, none of the expectations has a significant impact on Δ^* . Focusing on childrearing, men with a traditional attitude regarding the family (expecting their partner to take a break in her career for family reasons) are paid 2 per cent more. It is not possible to differentiate between a reward for being a traditionalist and reverse causality, where richer men can support their family and expect their partner to have a traditional role¹⁴. These results on attitudes towards family roles are in contradiction with Vella (1994) or Swaffield (2000) who report that

¹³ The expectation variables are measured on an inverse scale 1=agree strongly, 6 = disagree strongly, so that a negative sign represents a positive effect of a variable on wages.

¹⁴ Whilst it can be argued that these variables are due to a *a posteriori* justification – even so the results from Table 3 do not fully support this assumption, career break expectations are less likely to be biased by reverse causality since fertility decisions are typically taken at an older age; for this cohort, the average age of mothers at the birth of their child was 28.5. Unfortunately, this cannot be explored further due to lack of available information on fertility.

modern attitudes affect women's wages positively and have no effect on male wages. Individuals who expect to take a career break for family reasons do not face a wage penalty. However, since this is an almost exclusively female trait, it leads to a large impact on the explained gender wage gap. Confirming the results from Table 3, expecting a career break has the largest single effect on delta and clearly affects the gender wage gap. What is surprising here is that the penalty is observed even before the fertility decision is taken, which is consistent with women who have strong preferences for childrearing investing less in their human capital (training, bargaining, job search) and hence suffering from a pay penalty even before the fertility decisions have been taken.

6 **Further discussion**

Women expecting to spend less time on the job market anticipate lower returns to search and thus may be more likely to be found in jobs that are a poorer match. Alternatively, these women may remain with their current employer, even in a poor match, to build goodwill, and expect that the employer will reciprocate and accommodate their future career and childrearing role. Staying with the same employer is thus an investment for better job conditions in the future. Both hypotheses imply that women with a greater preference for childrearing will be in lower quality matches even early in their career. To test whether women with more traditional views about childrearing search with less intensity, the job match quality is proxied by two variables: first, "whether the respondent is in exactly the type of job she wanted" and second whether the respondent "expect to change employer in the next 5 years". The answers to these questions are coded as a binary variable (yes, no).

In the first two columns of Table 6, we report the marginal effects of the estimates of job match. The specification contains wages as well as all the covariates included in the wage

regression¹⁵. As expected wages are positively correlated with being in a good match. Character traits are correlated with match quality but these correlations do not appear to be gender specific. Most traits have the expected effects on the quality of the job match¹⁶. For example, individuals are more likely to be in the job they want if they value job satisfaction, and less likely, if they do not expect fulfilment from work and expect a career change. Career break expectations have the predicted effects but are only marginally significant. For men being exactly in the job wanted is correlated with expecting their partner to take a career break, whilst women who expect to take a career break are less likely to be in a perfect match.

The second proxy of the match quality is whether the graduates expect to change employer in the next five years. The marginal effects of the estimate of this model are reported in columns 3 and 4 of Table 6, separately by gender. As expected, higher wages are associated with a reduced desire to change employer. The career expectations and character traits that are significant have in general the expected effect, for example individuals who value international experience or claim to be ambitious are more likely to expect to change employer in the near future. Importantly women who expect to take a career break are less likely to want to change employer.

As predicted by a search model, women expecting to take a career break reduce their search, are more likely to be found in a poorer job match and are less willing to change employer. The latter conclusion is consistent with women with more traditional views trying to build goodwill with their current employer. All in all, women with higher preferences for childrearing appear to search the job market with less intensity, which could be the mechanism by which child rearing preferences affect wages.

¹⁵ The specification used in these regressions is identical to the one used for Model 5, see Table 3 for details. Only wages and character traits are reported here to gain space, but full results are available from the author.

¹⁶ As in Table 5, character traits are measured on an inverted scale with 1=I agree strongly and 6 = I disagree strongly.

Additionally, for women only, we estimate the determinants of expecting a career break for family reasons within the next 5 years¹⁷. Most successful women can afford a career break and doubling wages increases this probability by 5 percentage points. Women with a more traditional view on child rearing are 15 percentage points more likely to admit to be thinking of a break for family reasons in the next 5 years. As suggested previously, a higher preference for childrearing is correlated with a reduced emphasis on career development, which would explain the lower wages of these women even before the fertility decision is observed by the employer.

7 Conclusion

Looking at a homogenous population of recent UK graduates, a raw wage gap of 12.6 per cent is found. The dataset is rich in covariates usually not available to gender gap researchers, thus controls for typical human capital variables and for the degree subject, occupation, job values and character traits are included. Significant gender differences in the subject of graduation, the sector of employment and feminisation of the job are found, but also conforming to social stereotypes, women are more altruistic while men are more selfish and career driven.

Women invest in different types of human capital, are more likely to work in the public sector and in female dominated occupations, possibly to prevent discrimination. These differences remain even after accounting for motivation and expectations. With this extended specification, 84 per cent of the gender wage gap can be explained, so it would appear that discrimination is limited (at least for this population of recent graduates) and that studies

¹⁷ This is the answer to a separate question from the one used to proxy character traits. The question here is “which change do you expect to make within the next 5 years: take a career break for family-related reasons? This regression is not reported for men due to the lack of variability in the answer with just over 1% of men answering this question positively.

omitting these variables bias the explained component of the gender wage gap. This conclusion is robust to various assumptions made to decompose the raw wage gap.

However, the choice of degree and occupation as well as differences in character traits may themselves be due to discrimination and social pressure. One of the limits of this study is to assume the exogeneity of these variables and thus potentially over-estimate the explained wage gap. We provide some tentative evidence that while reverse causality cannot be ruled out, it is unlikely to be the sole factor driving the results. Furthermore, the results are robust to the inclusion of job characteristics which would absorb the effects of the character traits if those were solely *a posteriori* justification of the job market position. It should nevertheless be noted that the proportion of the gender wage explained by job expectations is reduced by two third when the job characteristics are added. Thus, while character traits and career expectations are correlated with job characteristics, we believe that they are nevertheless important components of the gender wage gap.

Future policies to reduce the gender wage gap should focus on pre-labour market decisions in order to reduce segregation in education. Despite the recent expansion and increasing feminisation of universities, the gender imbalance in subject choice has remained constant in the last two decades. Occupational segregation is also severe; not only are women more likely to work in a female environment, but the penalty for doing so is twice as large for women than for men. Further research should investigate the reasons behind the feminisation of occupations in order to reduce this imbalance.

Finally, a large proportion of the wage gap originates from attitudes towards childrearing; two thirds of women agree that they expect to take career breaks for family reasons while only 12 per cent of men do so. Instead, men expect their partner to take responsibility for childrearing. These characteristics affect the quality of the job match and the aspiration to improve it, which potentially drives the gender wage gap. Since changes in

attitudes may be slow, the gender wage gap is likely to persist. Policies to eliminate the gender wage gap should reduce the disturbance of childrearing for women and improve family friendliness of firms as well as access to childcare services. Such policies would be likely to have a direct effect, as well as affecting career expectations in the long term, thus reducing the wage gap for this generation and ensuring a greater convergence of wages in the future.

References:

Altonji J. and R. Blank, 1999, Race and Gender in the labor market, in *Handbook of Labor Economics*, Vol 3C, O. Ashenfelter and D. Card (eds), North-Holland

Anderson D., M. Binder and K. Krause, 2002, Women, Children and the Labor Market, *American Economic Review*, 92, 354-358

Baker M. and N. Fortin, 2001, Occupational gender composition and wages in Canada: 1987-88, *Canadian Journal of Economics*, 34 345-376

Balcock L. and S. Laschever, 2003, *Women don't ask: Negotiation and the gender divide*, Princeton University Press

Bayard K., J. Hellerstein, D. Neumark and K. Troske, 2003, New evidence on sex segregation and sex differences in wages from matched employee-employer data, *Journal of Labor Economics*, 21, 887-922

Bertrand M. and Mullanaithan, 2001, Do people mean what they say? Implications for subjective survey data, *American Economics Review*, 91, 67-72

Blackaby D., A. Booth and J. Frank, 2005, Outside offers and the gender pay gap: Empirical evidence from the UK academic labour market, *The Economic Journal*, 115, F81-107

Blackaby D., K. Clark, D. Leslie and P. Murphy, 1997, The distribution of male and female earnings 1973-91: Evidence for Britain, *Oxford Economic Papers*, 49, 256-272

Bowles S., H. Gintis and M. Osborne, 2001, The determinants of earnings: A behavioural approach, *Journal of Economic Literature*, 39, 1137-1176

Breen and Garcia-Penalosa, 2002, Bayesian learning and gender segregation, *Journal of Labor Economics*, 20, 899-922

Brown C. and M. Corcoran, 1997, Sex-based differences in school content and the male-female wage gap, *Journal of Labor Economics*, 15, 431-465

Chevalier A., 2002, Education, motivation and pay of UK graduates; Is it different for girls? *European Journal of Education*, 37, 4, 347-370

Chevalier A., G. Conlon, F. Galindo-Rueda and S. McNally, 2002, The returns to higher education teaching, *Department for Education and Skill*, Research Report

Corcoran M and P. Courant, 1985, Sex role socialization and labor market outcomes, *American Economic Review*, 75, 275-278

Cotton J., 1988, On the decomposition of wage differentials, *Review of Economics and Statistics*, 70, 236-243

Elias P., A. McKnight, J. Pitcher, K. Purcell and C. Simm, 1999, Moving on: Graduate careers three years after graduation, CSU/DfEE

Farber H. (1999) "Mobility and Stability: The dynamic of job change in labor markets" in *Handbook of Labor Economics*, Vol 3B, O. Ashenfelter and D. Card (Eds), North-Holland

Goldin C. and C. Rouse, 2000, Orchestrating impartiality: the impact of "blind" auditions on female musicians, *American Economics Review*, 90, 715-740

Harkness S., 1996, The gender earnings gap: evidence from the UK, *Fiscal Studies*, 17, 1-36

Kidd M. and M. Shannon, 1996, Does the level of occupational aggregation affect estimates of the gender wage gap? *Industrial and labor relations review*, 49, 317-329

Lissenburgh S., 2000, Gender discrimination in the labour market, *Policy Studies Institute*, RP 3, London

Machin S. and P. Puhani, 2003, Subject of degree and the gender wage differential: Evidence from the UK and Germany, *Economic Letters*, 79, 393-400

McNabb R., S. Pal and P. Sloane, 2002, Gender differences in educational attainment: The case of university students in England and Wales, *Economica*, 69, 481-503

Montmarquette C., K. Cannings and S. Mahseredjian, 2002, How do young people choose college major? *Economics of Education Review*, 21, 543-556

Mumford K. and P. Smith, 2004, The gender earnings gap in Britain, *University of York, Department of Economics*, DP 2004/05

Neumark, D., 1988, Employers' Discriminatory Behavior and the Estimation of Wage Discrimination, *Journal of Human Resources*, 23, 279-295

Niederle M. and L. Vesterlund, 2005, Do women shy away from competition? Do men compete too much? *National Bureau of Economic Research*, WP11474

Orazem P., J. Werbel and J. McElroy, 2003, Market expectations, job search and gender differences in starting pay, *Journal of Labor Research*, 24, 307-322

Osborne M., 2001, The economic significance of personality: differential rewards by sex and status, *Towson University*, mimeo

Polacheck S. and Kim M.K., 1995, Panel estimates of the gender earnings gap, *Journal of Econometrics*, 61, 23-42

Swaffield J., 2000, Gender Motivation, experience and wages, *Centre for Economic Performance*, London School of Economics, DP 417

Vella F., 1994, Gender roles and human capital investment: The relationship between traditional attitudes and female labour market performance, *Economica*, 61, 191-211

Walker I. and Y. Zhu, 2005, The college wage premium, over-education and the expansion of higher education in the UK, *IZA*, DP 1627

Table 1A As far as long-term values are concerned, how important are the following?

	Female					Male				
	Very Important	Important	Not sure	Not important	Unimp ortant	Very Important	Important	Not sure	Not important	Unimp ortant
Career development	43.3	48.8	5.2	2.5	0.3	51.9	41.9	4.3	1.6	0.3
Personal development	66.5	32.3	1.0	0.2	0.0	64.3	33.1	2.1	0.3	0.1
Job satisfaction	77.5	22.2	0.3	0.0	0.0	67.8	30.7	1.2	0.3	0.0
Financial reward	14.4	59.2	12.8	13.0	0.6	24.5	56.4	10.1	8.0	0.9
Status and respect	14.9	54.1	17.3	12.4	1.3	17.1	51.0	16.3	12.5	3.2
Valued by employer	55.7	41.7	2.2	0.3	0.1	43.3	50.1	4.0	1.6	1.0
Socially useful job	16.6	34.4	29.2	17.0	2.9	6.7	24.5	32.7	25.6	10.4
International experience	6.5	18.7	22.0	34.0	18.8	9.4	23.5	22.4	28.4	16.3
Rewarding leisure	22.6	35.5	17.0	17.1	7.8	19.9	37.2	17.2	17.7	8.0
Involvement in local issues	3.8	22.0	30.2	32.3	11.7	2.2	11.9	24.4	36.0	25.5
Concern with ecology	5.3	25.3	27.3	29.8	12.4	4.3	20.9	26.3	26.3	22.2
Concern with current affairs	5.8	35.8	26.8	23.1	8.7	8.4	35.9	24.2	19.3	12.1

Source: Graduate 1995, obs Women: 2872, Men: 2186. All statistics use population weights

Table 1B How far do you agree/disagree with the following statements?

	Female					Male				
	Agree strongly	Agree somewhat	Not sure	Disagree somewhat	Disagree strongly	Agree strongly	Agree somewhat	Not sure	Disagree somewhat	Disagree strongly
I am extremely ambitious	17.0	53.2	10.5	16.4	2.9	28.0	50.7	8.8	10.7	2.0
I do not expect to get main fulfilment from work	10.9	41.2	13.8	28.4	5.7	14.4	39.0	17.1	23.4	6.0
I live to work	1.2	10.6	8.2	42.1	37.9	1.7	14.1	10.2	38.4	35.6
I work to live	24.0	51.1	8.9	12.4	3.7	25.1	48.9	10.2	12.6	3.2
I expect to work continuously until retirement	8.7	24.4	31.0	24.7	11.3	21.8	35.7	21.6	13.8	7.1
I expect to take career breaks for family reasons	27.7	36.5	26.1	6.7	3.0	1.9	9.9	39.6	32.0	16.7
I expect my partner to take career breaks	3.0	13.9	46.9	24.2	12.0	10.0	30.4	42.3	10.8	6.6
I expect to change career several times	9.1	27.1	30.8	21.9	11.1	11.1	31.2	29.0	19.5	9.2

Source: Graduate 1995, obs Women: 2872, Men: 2186. All statistics use population weights

Table 2 Summary statistics- Mean (standard deviation)

	Women	Men	All		Women	Men	All
Gross pay	18,336 (6030)	21,115 (7698)	* (4.08)	19,759 (7072)			
Education characteristics				Job characteristics			
A level score	9.01 (3.80)	8.29 (4.30)	*	8.64 (4.08)	Experience	35.30 (8.51)	35.69 (8.92)
No A level	0.11	0.17	*	0.14	Size <10	0.05	0.05
First-class honours	0.07	0.07		0.07	Size 10-24	0.11	0.06
Upper second	0.51	0.42	*	0.47	Size 25-49	0.10	0.07
Second honours	0.33	0.36	*	0.35	Size 50-249	0.18	0.19
Other honours	0.09	0.14	*	0.12	Size 250-499	0.07	0.08
Arts	0.13	0.08	*	0.10	Size 500+	0.48	0.56
Humanities	0.09	0.06	*	0.07	Manager	0.22	0.24
Languages	0.07	0.02	*	0.04	Professional	0.37	0.33
Law	0.04	0.03		0.04	Associate professional	0.20	0.23
Social science	0.13	0.11	*	0.12	Clerical	0.14	0.09
Math & computing	0.04	0.11	*	0.08	Other occupation	0.07	0.10
Natural science	0.11	0.11		0.11	per cent female in occupation	0.50 (0.24)	0.34 (0.23)
Medicine	0.09	0.05		*	Permanent contract	0.80	0.83
Engineering	0.03	0.20	*	0.12	Public sector	0.27	0.11
Business	0.11	0.14		*	Number of jobs	3.10 (1.52)	2.77 (1.47)
Education	0.10	0.02		0.06	Personal characteristics		
Other vocational	0.05	0.06		0.06	Age 26-29	0.37	0.42
Interdisciplinary	0.02	0.02		0.02	White	0.95	0.92
Old university	0.40	0.40		0.40			
60's university	0.11	0.11		0.11	Observation	2872	2186
90's university	0.39	0.46	*	0.43			5058
College of HE	0.09	0.04	*	0.06			
Post Grad certificate	0.21	0.12	*	0.16			
Professional qualification	0.14	0.15		0.15			
Master	0.10	0.11		0.10			
Ph.D	0.02	0.02		0.02			

Source 1995 cohort- All statistics use population weights. Standard deviation reported for continuous variables only.

* denotes a statistically significant difference between gender at the 95 per cent confidence level.

No gender differences were found for current region of work or for occupational class of the father.

Table 3 Decomposition of wage gap

Model	(1)	(2)	(2')	(3)	(3')	(3'')	(4)	(5)	Manager Professional only
Raw gap				0.126					0.122
	0.026	0.029	0.064	0.082	0.073	0.088	0.084	0.107	0.098
	(0.005)	(0.006)	(0.007)	(0.007)	(0.008)	(0.004)	(0.010)	(0.010)	(0.010)
Explained gap	20.5	22.8	50.4	64.6	57.5	69.5	66.1	84.4	80.9
	%	%	%	%	%	%	%	%	%
Disadvantage of women	0.051	0.051	0.032	0.022	0.027	0.020	0.021	0.010	0.012
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.003)	(0.004)
Advantage of men	0.049	0.047	0.031	0.021	0.026	0.019	0.020	0.010	0.012
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.003)	(0.004)
% explained by education variables		2.9	-16.7					-6.3	-6.3
% explained by subject			77.3					24.1	31.25
% explained by job characteristics				74.1	70.3	69.4		24.6	6.4
% explained by occupation					-0.0			0.8	0.0
% explained by number of jobs						6.9		2.8	2.2
% explained by job value							45.0	21.1	27.0
% explained by career expectations							30.4	11.7	11.0
[% explained by career break alone]							[24.1]	[9.90]	[12.8]

Note: All statistics use population weights. Neumark (1988) decomposition is used. Standard errors in parentheses

Model 1: Base model, experience, experience squared, age dummy 25-29, white, regional dummies

Model 2: Base + A-level score, type of institutions, degree grade, other qualification dummies

Model 2': As 2 + 13 subject of degree dummies

Model 3: Base + firm size, public sector, type of contract, feminisation,

Model 3': As 3 + 8 dummies for occupation Model 3'': As 3 +number of jobs held since graduation

Model 4: Base + indices of job value and career expectation

Model 5: Model 2 + model 3 + model 4

Table 4 Decomposition of gender wage gap – various decomposition methods

	(1)	(2)	(3)	(4)	(5)	
(β) used for decomposition	β_w	β_m	$.5\beta_w + .5\beta_m$	$N_w/N\beta_w + N_m/N\beta_m$	β^*	
Raw gap			12.6			
Explained	7.3	10.0	8.7	8.7	10.7	
Unexplained	5.3	2.6	3.9	3.9	2.2	
-Women disadvantage	-	-	1.3	1.3	1.0	
- Men advantage	-	-	2.6	2.6	0.9	

Note: Cohort of 1995 UK graduates, weighted sample.

Specification is the one used in Table 3 (Model 5)

Table 5 Wage functions estimates

	Women	Men	All	Delta *100
Subject of degree				
Humanities	0.015 (0.68)	0.056 (1.35)	0.024 (1.26)	0.227
Languages	0.075 (3.03)	-0.011 (0.16)	0.055 (2.31)	-0.298
Law	0.089 (3.30)	0.150 (3.27)	0.121 (4.17)	-0.030
Social sciences	0.012 (0.61)	0.068 (2.19)	0.031 (2.03)	-0.300
Maths & computing	0.142 (6.03)	0.294 (9.30)	0.244 (11.68)	0.513
Natural science	-0.000 (0.01)	0.075 (2.65)	0.037 (2.03)	0.003
Medicine & related	0.201 (7.17)	0.285 (4.25)	0.227 (6.73)	-0.091
Engineering	0.126 (3.85)	0.145 (6.10)	0.126 (6.60)	0.445
Business studies	0.121 (6.67)	0.146 (4.87)	0.130 (7.56)	-0.044
Education	0.025 (0.72)	0.007 (0.10)	0.025 (0.84)	-0.071
Other vocational	0.070 (1.76)	0.079 (1.47)	0.062 (2.14)	0.050
Interdisciplinary	0.058 (1.26)	0.088 (1.65)	0.073 (2.82)	-0.005
Job characteristics				
Firm size 10 - 24	-0.017 (0.42)	0.003 (0.05)	-0.009 (0.26)	0.067
Firm size 25 - 49	0.018 (0.61)	0.005 (0.11)	0.012 (0.49)	-0.112
Firm size 50 - 249	0.023 (0.72)	0.056 (1.22)	0.028 (0.91)	0.066
Firm size 250 - 499	0.026 (0.63)	0.108 (2.55)	0.062 (2.01)	0.026
Firm size 500 or more	0.067 (2.11)	0.141 (3.93)	0.103 (3.83)	0.006

Table 5: Continue

	Women	Men	All	Delta *100
% Female in occupation	-0.217 (5.52)	-0.140 (2.62)	-0.198 (5.91)	-0.680
Permanent job	0.052 (2.60)	0.095 (2.91)	0.072 (3.82)	0.158
Public sector	0.067 (2.35)	0.124 (3.89)	0.107 (5.23)	1.436
Number of Jobs	-0.012 (3.25)	-0.008 (1.31)	-0.011 (3.14)	1.032
Long term values				
Career development	0.026 (2.90)	-0.005 (0.24)	0.012 (1.19)	-0.187
Personal development	-0.011 (0.69)	0.004 (0.25)	-0.000 (0.03)	0.004
Job satisfaction	-0.006 (0.38)	-0.005 (0.34)	-0.007 (0.54)	-0.029
Financial reward	-0.049 (5.70)	-0.052 (4.55)	-0.050 (6.53)	-0.319
Status and respect	-0.017 (2.16)	-0.002 (0.16)	-0.009 (1.60)	-0.082
Valued by employer	0.016 (1.42)	-0.014 (1.05)	-0.004 (0.48)	0.195
Socially useful job	0.008 (1.07)	0.018 (1.88)	0.015 (2.31)	-1.059
International experience	-0.006 (0.91)	-0.026 (3.61)	-0.017 (4.32)	0.020
Rewarding leisure	-0.007 (1.25)	-0.008 (1.17)	-0.007 (1.65)	0.020
Concern: local issues	0.006 (0.90)	0.011 (0.98)	0.010 (1.60)	0.460
Concern: ecology	0.007 (1.34)	0.017 (2.44)	0.015 (2.98)	-0.135
Concern: current affairs	0.000 (0.06)	-0.002 (0.35)	-0.004 (1.36)	0.005

Table 5 Continued

	Women	Men	All	Delta *100
Career expectations				
Ambitious	-0.033 (4.41)	-0.047 (5.14)	-0.040 (6.71)	-0.135
Fulfilment from work	0.000 (0.06)	0.005 (0.84)	0.003 (0.79)	0.005
I live to work	0.000 (0.06)	-0.000 (0.04)	-0.001 (0.19)	-0.006
I work to live	-0.001 (0.15)	-0.000 (0.05)	-0.003 (0.69)	0.002
Work til retirement	0.024 (3.54)	0.022 (2.84)	0.026 (4.88)	0.399
Career breaks	-0.000 (0.04)	-0.007 (0.95)	0.008 (1.58)	-4.536
Partner take breaks	0.010 (1.64)	-0.024 (2.59)	-0.015 (3.34)	-0.957
Career change	0.004 (0.88)	0.021 (2.46)	0.012 (2.10)	1.448
Constant	7.561 (57.49)	7.479 (39.75)	7.516 (59.06)	
Observations	2872	2186	5058	
R-squared	0.38	0.45	0.42	

Note: Cohort of 1995 UK graduates, weighted sample.

The specification also includes dummies for region of residence, a quadratic in labour market experience, dummies for age and ethnicity, as well as A-level score, type of institution, degree grade and additional qualification, and dummies for occupation. The base individual is aged less than 26, graduated in Arts from an old university with a 1st class honour degree, works as a manager in a firm of less than 10 employees.

The expectation variables are measured on an inverse scale 1=agree strongly and 6=disagree strongly, so that a negative sign represents a positive effect of a variable on wages.

T ratios are reported in parentheses and are corrected for clustering at the institution level.

Table 6 Character traits and job matching

	Exactly job I wanted		Expect to change employer		Expect career break for family reason
	Female	Male	Female	Male	Female
Ln Wage	0.295 (5.51)	0.291 (6.24)	-0.106 (2.48)	-0.136 (2.55)	0.047 (2.13)
Career development	-0.024 (1.26)	-0.023 (1.14)	-0.026 (1.25)	0.035 (1.47)	0.033 (2.83)
Personal development	0.009 (0.48)	0.048 (2.15)	-0.027 (1.33)	-0.039 (1.64)	0.019 (1.25)
Job satisfaction	-0.100 (2.85)	-0.120 (3.42)	0.040 (1.91)	0.006 (0.22)	0.012 (0.83)
Financial reward	0.040 (2.33)	0.042 (2.06)	-0.020 (1.44)	-0.022 (0.99)	-0.005 (0.53)
Status and respect	-0.044 (2.36)	-0.019 (1.40)	-0.005 (0.38)	-0.013 (0.97)	0.004 (0.50)
Valued by employer	-0.013 (0.65)	0.008 (0.26)	-0.004 (0.20)	0.010 (0.55)	-0.005 (0.40)
Socially useful job	-0.021 (1.51)	-0.019 (1.52)	-0.010 (1.14)	0.006 (0.54)	0.011 (1.25)
International experience	0.009 (0.77)	0.007 (0.60)	-0.025 (2.20)	-0.027 (2.71)	0.022 (4.16)
Rewarding leisure	-0.003 (0.31)	-0.025 (2.20)	-0.005 (0.50)	0.005 (0.39)	0.005 (0.71)
Concern: local issues	-0.025 (2.20)	-0.025 (1.77)	0.014 (1.00)	0.036 (2.42)	-0.011 (1.29)
Concern: ecology	0.035 (2.72)	0.030 (1.97)	0.006 (0.57)	-0.013 (0.97)	-0.008 (1.23)
Concern: c. affairs	-0.005 (0.36)	0.014 (1.03)	0.024 (2.02)	0.024 (2.49)	-0.005 (0.68)
Ambitious	-0.016 (0.77)	-0.034 (2.26)	-0.002 (0.16)	-0.035 (2.85)	0.018 (1.81)
Fulfilment from work	0.027 (2.35)	0.041 (3.75)	-0.021 (2.66)	-0.044 (3.51)	-0.009 (1.68)
I live to work	-0.040 (3.70)	-0.042 (2.10)	0.029 (2.21)	0.019 (2.05)	-0.007 (0.98)
I work to live	0.031 (3.23)	0.004 (0.31)	-0.026 (2.42)	0.005 (0.45)	0.001 (0.18)
Work til retirement	0.001 (0.08)	-0.002 (0.20)	0.000 (0.05)	0.003 (0.25)	0.019 (2.33)
Career breaks	-0.022 (1.74)	0.014 (1.03)	0.039 (2.97)	-0.003 (0.20)	-0.152 (11.18)
Partner take breaks	0.006 (0.47)	-0.027 (1.90)	-0.013 (1.04)	0.010 (0.79)	0.024 (3.75)
Career change	0.124 (10.98)	0.062 (4.66)	-0.092 (5.73)	-0.081 (6.39)	0.006 (1.05)
Pseudo R ²	0.236	0.161	0.094	0.098	0.252

Note: Cohort of 1995 UK graduates, weighted sample.

The specification is identical to the one presented in Table 5, and adds the log of individual wage. Marginal effects from a probit model calculated at the mean value of the variables are reported.

The expectation variables are measured on an inverse scale 1=agree strongly and 6=disagree strongly, so that a negative sign represents a positive effect of a variable on wages.

T-ratios are reported in parentheses and are corrected for clustering at the institution level.

Annex 1
Gender wage gap over time – Labour Force Survey 1998

Age	All education level		Graduate only	
	Annual Pay	Hourly Pay	Annual Pay	Hourly Pay
16-19	0.077	0.011	-	-
20-24	0.111	0.036	0.101	0.063
25-29	0.166	0.066	0.133	0.080
30-34	0.226	0.106	0.191	0.123
35-39	0.315	0.188	0.235	0.164
40-44	0.376	0.243	0.274	0.204
45-49	0.381	0.255	0.286	0.211
50-54	0.396	0.268	0.294	0.214
55-59	0.329	0.199	0.307	0.243
Overall	0.300	0.184	0.278	0.214

Note: All based statistics based on pooling the four Quarterly Labour Force Surveys for 1998. The population includes full time employee only with positive wage. Graduate is defined as possessing a qualification at NVQ level 4 or above. All calculations are based on log wages. All statistics are significantly different from 0 with the exception of Hourly pay for 16-19.